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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,263	09/30/2003	Timothy S. Campbell	Campbell 2-8-1-1-1/075903	4026
29391	7590	11/24/2004	EXAMINER ABRAHAM, FETSUM	
BEUSSE BROWNLEE WOLTER MORA & MAIRE, P. A. 390 NORTH ORANGE AVENUE SUITE 2500 ORLANDO, FL 32801			ART UNIT 2826	

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/675,263

Applicant(s)

CAMPBELL ET AL.

Examiner

Fetsum Abraham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 36-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

**Claims 1,3,15, are rejected under 35 U.S.C. 102(a) as being anticipated by Wu et al (6,720,256).**

As for claims 1,3,15, the patent discloses a process of etching a material (57) by forming fluorine based plasma and forming a vertical opening (60) to reach the material and etching the layer by exposing it to the plasma at processing temperature of 225 degrees centigrade (see column 6, 55-65).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the primary reference in view of Shen (6,693,038).**

The primary reference might have omitted the content of the fluorine containing gas but the Shen teaches that NF<sub>3</sub> is a known component of such a gas (see column 2, 25-35). Therefore, it would have been obvious to one skilled in the art to use Sahen's plasma in the etching process of Wu et al since the composition produces a good etchant material.

**Claims 4,5,6,9-12,14,16,19,20-28,30,31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the primary reference.**

Although the prior art might have omitted to mention the aspect ratio of the opening, it would have been obvious to one skilled in the art to design it such that it satisfies a specific performance anticipation because aspect ratio is a known variable in the art that depends on particular interest such as filling material strength, conductive resistance and durability.

As for claims 5,6, etching a layer is a function of controlled environment such as etchant density/quantity, temperature and time. Further, the etched material is a sacrificial layer.

As for claims 9,11,12,21,30 since the contact filling (21) in figure 1C is metallic, it is clear that a known insulator either oxide or nitride or a combination of the two is applicable as overlying and underlying materials to guarantee cross talk induced problems. Clearly, the overlying materials are then removed for the etchant material to reach the target material.

As for claims 10,14,20,26,27,31 processing temperature and pressure are variable in the art that has no patentable weight.

As for claims 22,23,24 figure 1C of the prior art shows a contact (21) formed by the claimed process. Although the prior art omits to mention the type of material layer (12), it is, however, claims it to be a conductor, which in broad sense includes a highly doped material. The materials over the conductor can be classified as sacrificial layer

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and the layers above the conductor have been exposed to the plasma through the opening

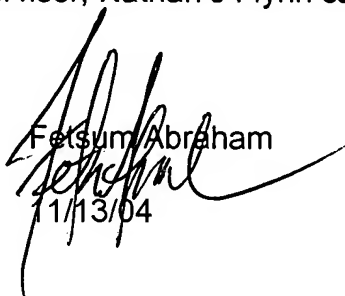
As for claims 32-35, the prior art process can form any type of device. Once a buried conductor is attached to a contact through an opening, capacitors are easily formed by introducing a dielectric material and a conductor over. Memory capacitors are best known to be formed by such an obvious process.

**Claims 8,13,17,18,29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the primary reference in view of Lee et al (5,872,061).**

Although the primary reference discloses the material to be etched different from the claimed material, Lee et al, however, teaches the group of materials applicable to fluorine based plasma etching in (column 5, 25-35). Therefore, it would have been obvious to one skilled in the art to etch the claimed material through the process of etching disclosed in the primary reference specifically in circumstances involving the formation of contacts.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.

  
Fetsum Abraham  
11/13/04